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The style is easy, direct, and colloquial, and expresses a consistent endeavor after the utmost simplicity of statement and freedom from all technical terminology. One might call these booklets "guides to scientific thinking," in short words with easy illustrations, for their burden is told as to a child and the reader is *du-und-diched* throughout. Withal, however, the arrangement is clear and the exposition good, and the striving after simplicity is induced by a sense of the great impediments which the untrained thinker must meet in dealing with all profound critical problems. For the object of these studies is not to make known new facts to the reader but to stimulate him to logical reflection, not to furnish the memory but to arouse independent thinking. The world is fond of a phrase, for thinking is burdensome, and there are many technical terms on the lips of the reading public which have filtered through the magazines and popular books from scientific writings and are facilely employed but ill-understood. Evolution, mechanism and teleology, heredity and Darwinism, egoism, freedom of the will, — these phrases clothe the most significant problems of science and philosophy. The moment a new thought, a successfully daring speculation is represented in a phrase the imitative herd seizes upon it and bandies it glibly about, with commonly the most inadequate grasp of its meaning. To arouse a candid reflection upon such terms, to make the reader honestly attempt an analysis and comprehension of them for himself is the aim of these little books.

The following chapters of the series are already announced : Evolution in Nature ; Heredity and Darwinism ; On the Freedom of the Will ; The Philosophy of Egoism ; Mechanism and Organism ; Instinct ; On *a priori* Knowledge ; The Division of Labor ; On Positivism in Natural Science ; The Mechanics of Evolution ; Morals and Intellect.

ROBERT MACDOUGALL.

ZOÖLOGY.

Emery's Zoologia. — The last fifteen years have been characterized by the appearance of an unusual number of good zoölogical text-books. Most of these works have first appeared in German, French, or English ; Emery's¹ *Compendium of Zoölogy* is in Italian. The field covered

¹ Emery, C. *Compendio di Zoologia*. vii + 456 pp., 600 illustrations and a map. Bologna, Nicola Zanichelli, 1899.

by these books has been so thoroughly worked over that any new effort in this direction could hardly be expected to possess great novelty and would naturally differ from its predecessors only in details. Emery's book is conventionally divided into a general part, of some hundred pages, devoted to the principles of zoölogy, and a special part, of over three times this length, containing a descriptive classification of the animal kingdom.

In the special part the Protozoa and Metazoa are recognized as primary divisions. The term radiates (zoöphytes) is resurrected to include the sponges, cœlenterates, and ctenophors; all the remaining Metazoa are placed in the group Bilateralia. This includes the worms (under which are placed the Platyhelminthes, worms proper, molluscoids, and Enteroptneusta), the echinoderms, the mollusks, the arthropods, and the chordates. The innovations in classification so far as they affect the larger divisions are brought about chiefly by the fusion of what were formerly considered separate groups. This seems to us to make for unnaturalness in the classification; thus it is very improbable, as in fact the author admits, that the group of worms as constituted above is a homogeneous assemblage, and the division Bilateralia is in a similar way still less justifiable.

The general part, which, so far as it goes, is well written, naturally offers a much greater opportunity for individualizing the book. It is prefaced by a short historical account in which the foreigner is struck by the translations of familiar names, such as Giovanni Mueller and Carlo Darwin. Then follows a brief but well-written chapter on protoplasm, its activities, the cell, direct and indirect division, etc. A brief treatment of histogenesis and organogenesis is followed by an account of the architecture of the metazoan body and a discussion of radial and bilateral symmetry, of metamerism, and of the laws of homologies. The significance of the individual and the formation of colonies are then dealt with. Reproduction is the title of the next chapter. Protozoan and metazoan reproduction are comprehensively compared, and such topics as sexual reproduction, parthenogenesis, alternation of generations, and heredity are considered. The evidences and consequences of evolution conclude the general part. This is perhaps the best chapter in the book, and the happy selection of Italian examples and illustrations makes it enjoyable reading even to the mature zoölogist.

While the general part compares very favorably with the corresponding portion of other works, it has two obvious deficiencies—

the almost total lack of any comparative physiological and histological statements. The absence of the former may be in part justified by the disorganized condition that the science of comparative physiology is still in, but no such excuse can be urged for comparative histology, which has already received good treatment in several text-books.

To a foreigner the text seems generally free from typographical errors, though occasional misprints, as Crincidi for Crinoidi (p. 217), are to be noticed. The text justifies a much better letterpress, and it is to be regretted that so many of the figures are spoiled by poor printing. In the map illustrating the zoögeographic regions (p. 72) the areas designated by different kinds of shading are scarcely to be recognized, and while many well-known islands have apparently sunk below the surface, numerous small archipelagoes of printer's ink have made their appearance in unexpected quarters. On the whole, the book deserves hearty commendation and ought to exert a stimulating influence on the study of zoölogy in Italy.

G. H. P.

Jordan's Manual of Vertebrates.—An eighth edition of this work is just issued from the press of A. C. McClurg & Co., Chicago. In it the nomenclature is brought to date, that of the fishes in an appendix, that of reptiles and birds by changes in the plates, and that of the mammals by a rewriting of the text. In the latter group special assistance has been given by Mr. T. S. Palmer of Washington, and in the reptiles by Dr. Leonhard Stejneger and others.

The volume now contains condensed descriptions of 1149 species of vertebrate animals native to the northeastern United States and arranged in 610 genera. Since the first edition in 1876 great changes have taken place in the nomenclature of these animals, not half the species retaining the scientific name then recognized.

All these changes have been, however, in the direction of stability of nomenclature, and the specific names in twenty-nine cases out of thirty are now permanently fixed by the law of priority.

Generic names must always vary with different views of convenience in the valuation of groups. Unfortunately they still fluctuate through variations in the methods employed in the restriction of the collective groups of the older authors.

The book is well printed, and the binding has improved with each consecutive edition.